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U.S. EPA REGION 10
OFFICE OF WATER AND WATERSHEDS

Annual Report of Operations for Year 2016

To comply with NPDES General Permit No. WAG130000 for Federal Aquaculture Facilities and Aquaculture Facilities Located in Indian Country within the Boundaries of the State of Washington

NPDES # for your Facility:
WAG130005

Facility & Owner Information

Facility Name: Quinault National Fish Hatchery	
Operator Name (Permittee): US Fish and Wildlife Service	
Address: 3 Sockeye Rd. Humptulips, WA 98552	
Email: josh_homer@fws.gov	Phone: 360-288-2508
Owner Name (if different from operator):	
Email:	Phone:

Best Management Practices (BMP) Plan

Has the BMP Plan been reviewed this year? ■ Yes ☐ No

Does the BMP Plan fulfill the requirements of the General Permit? ■ Yes ☐ No

Summarize any changes to the BMP Plan since the last annual report. Attach additional pages if necessary.

N/A

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EPA General Permit WAG130000 - Annual Report

Operations and Production

Total harvestable weight produced in the past calendar year in pounds (lbs): 104,369 Pounds of food fed to fish during the maximum month: 15,983

List the species grown or held at your facility and the annual production of each in gross harvestable weight. If fish were released rather than harvested, list the weight at time of release.

Species	Fish Produced	Receiving Water(s) to which Fish were Released	Month Released/ Spawned
Coho Salmon	666,407	Cook Creek - 35,971 lbs.	April
Chum Salmon	1,924,542	Cook Creek - 46,602 lbs.	April
Steelhead Salmon	201,439	Cook Creek - 5,012 lbs.	April
Steelhead Salmon	419,598	Transferred to Quinault Tribal	September
		Hatcheries for release in the spring.	
		16,784 lbs.	

Fill in the table below with production numbers from the past year. List the **maximum** amount of fish on-site and the maximum amount of food fed **per month**.

Month	Total Fish (lbs)	Fish Feed (lbs)	Month	Total Fish (lbs)	Fish Feed (lbs)
January	868,185	4,224	July	1,356,337	6,195
February	1,174,024	8,309	August	1,331,540	12,137
March	3,794,063	15,983	September	1,327,449	9,968
April	4,186,267	5,548	October	856,007	8,964
May	1,521,454	8,996	November	855,334	7,656
June	1,454,429	9,266	December	854,706	2,913

Additional Comments:

Solid Waste Disposal

Describe the solid waste disposed of during the calendar year (including fish mortalities).

Type of Solid Disposed	Date Disposed	Location Disposed
Salmon - Rwy. Morts and Spawned	1 Jan. - 31 Dec.	Buried on site
Sediment from Settling Basin	20 April	Upland on site
Fish Detritus/Sediment from Rwy.	1 Jan. - 31 Dec.	In-Line Settling Basin
Fish Detritus/Sediment From ILSB	1 Jan. - 31 Dec.	Pumped to Lagoon
Additional Comments:		

Fish Mortalities

Include a description and the dates of mass mortalities in the past year (more than 5% per week). Attach additional pages, if necessary. Include total mortalities from all causes.

Date	Cause of Deaths	Steps Taken to Correct Problem	Pounds of Fish
N/A			
Additional Comments:			

Noncompliance Summary

Include a description and the dates of noncompliance events (including spills), the reasons for the incidents, and the steps taken to correct the problems. Attach additional pages, if necessary.

N/A

Inspections & Repairs for Production & Wastewater Treatment Systems

Date Inspected	Date Repaired	Description of System Inspected and/or Repaired
20 April		Sand Settling basin inspected and cleaned
21 July		ILSB pumps checked and flushed
When Possible		Rwy mud valves and isolation valves

Aquaculture Drugs and Chemicals

Please indicate whether you used each drug/chemical **during the past calendar year**.
Describe the use of each drug/chemical in more detail on the following pages.

Used in the past year?	Drug or Chemical
☐ Yes ■ No	Azithromycin
☐ Yes ■ No	Chloramine-T: ***See additional reporting requirements on page 7***
☐ Yes ■ No	Chlorine
☐ Yes ■ No	Draxxin
☐ Yes ■ No	Erythromycin - injectable
☐ Yes ■ No	Erythromycin - medicated feed
■ Yes ☐ No	Florfenicol (Aquaflor)
■ Yes ☐ No	Formalin - 37% formaldehyde: ***See additional reporting requirements on page 7***
☐ Yes ■ No	Herbicide - describe:
☐ Yes ■ No	Hormone - describe:
☐ Yes ■ No	Hydrogen Peroxide: ***See additional reporting requirements on page 7***
■ Yes ☐ No	Iodine: ***See additional reporting requirements on page 7***
☐ Yes ■ No	Oxytetracycline
☐ Yes ■ No	Potassium Permanganate: ***See additional reporting requirements on page 7***
☐ Yes ■ No	Romet
☐ Yes ■ No	SLICE (emamectin benzoate)
■ Yes ☐ No	Sodium Chloride - salt
☐ Yes ■ No	Vibrio vaccine
☐ Yes ■ No	Other:
☐ Yes ■ No	Other:

Aquaculture Drugs and Chemicals (cont'd)

Describe all drug and/or chemical treatments that occurred during the year. Fill out the information below for each drug or chemical, plus page 7 for water-borne treatments. Attach additional pages as necessary.

Brand Name: Aquaflor		Generic Name: Florfenicol	
Reason for use: Treatment for furunculosis			
☐ Preventative/Prophylactic ■ As-needed	Total quantity of formulated product per treatment (specify units): Varies	Total quantity of formulated product used in past year (specify units): 129.8 grams	
Date(s) of treatment: 15-24 June and 21-30 July			Total number of treatments in past year: 2
Maximum daily volume of treated water:	Treatment concentration (specify units): 10 mg/kg body weigt	Duration and frequency of treatment(s): 10 consecutive days per treatment	
Method of application:	☐ Static Bath ☐ Flow-through	■ Medicated Feed ☐ Other (describe):	
Location in facility chemical was used (check all that apply):	■ Raceways ☐ Incubation building	☐ Ponds ☐ Off-line settling basin	☐ Other (describe):
Where did water treated with this chemical go? (check all that apply):	☐ Discharged w/o treatment ☐ Settling basin	☐ Septic System ☐ Publicly owned treatment works	☐ Other (describe):
Provide any additional information about how this chemical was used and/or special pollution prevention practices during use: Food purchased from Bio-Oregon, top coated at at 10 mg/kg for a 1% feed rate.			

Brand Name: Sodium Chloride		Generic Name: Salt	
Reason for use: Fish were showing possible signs of cold water disease			
■ Preventative/Prophylactic ☐ As-needed	Total quantity of formulated product per treatment: 250 lbs	Total quantity of formulated product used in past year (specify units): 500 lbs	
Date(s) of treatment: 18-19 July			Total number of treatments in past year: 1 @ 2 days
Maximum daily volume of treated water: 76,560	Treatment concentration (specify units): unknown	Duration and frequency of treatment(s): ~2 hours once daily for 2 days	
Method of application:	☐ Static Bath ■ Flow-through	☐ Medicated Feed ☐ Other (describe):	
Location in facility chemical was used (check all that apply):	■ Raceways ☐ Incubation building	☐ Ponds ☐ Off-line settling basin	☐ Other (describe):
Where did water treated with this chemical go? (check all that apply):	■ Discharged w/o treatment ☐ Settling basin	☐ Septic System ☐ Publicly owned treatment works	☐ Other (describe):
Provide any additional information about how this chemical was used and/or special pollution prevention practices during use: Given to help osmotic stress until a BCWD diagnosis was made.			

Aquaculture Drugs and Chemicals (cont'd)

Describe all drug and/or chemical treatments that occurred during the year. Fill out the information below for each drug or chemical, plus page 7 for water-borne treatments. Attach additional pages as necessary.

Brand Name: Parasite-S		Generic Name: Formaldehyde	
Reason for use: Preventative for fungus on eggs and to treat epizootic infections of fish			
■ Preventative/Prophylactic ■ As-needed	Total quantity of formulated product per treatment (specify units): Varies	Total quantity of formulated product used in past year (specify units): 252.1 gallons	
Date(s) of treatment: 1 Jan. - 31 Dec. as necessary			Total number of treatments in past year: 639
Maximum daily volume of treated water: 207,540	Treatment concentration (specify units): 1670-84 ul/l	Duration and frequency of treatment(s): As needed - 15 min. eggs, 60 min. fish	
Method of application:	☐ Static Bath ■ Flow-through	☐ Medicated Feed ☐ Other (describe):	
Location in facility chemical was used (check all that apply):	■ Raceways ■ Incubation building	☐ Ponds ☐ Off-line settling basin	☐ Other (describe):
Where did water treated with this chemical go? (check all that apply):	■ Discharged w/o treatment ■ Settling basin	☐ Septic System ☐ Publicly owned treatment works	☐ Other (describe):
Provide any additional information about how this chemical was used and/or special pollution prevention practices during use:			

Brand Name: Ovadine		Generic Name: Iodine	
Reason for use: Egg disinfectant, foot baths, tool disinfectant, wader disinfectant			
■ Preventative/Prophylactic ■ As-needed	Total quantity of formulated product per treatment: Varies	Total quantity of formulated product used in past year (specify units): ~15 Gallons	
Date(s) of treatment: 1 Jan. - 31 Dec			Total number of treatments in past year: Unknown
Maximum daily volume of treated water: 135 gallons	Treatment concentration (specify units): 75 ppm	Duration and frequency of treatment(s): 30 - 60 minutes for eggs	
Method of application:	■ Static Bath ■ Flow-through	☐ Medicated Feed ☐ Other (describe):	
Location in facility chemical was used (check all that apply):	■ Raceways ■ Incubation building	☐ Ponds ☐ Off-line settling basin	■ Other (describe): spawning building
Where did water treated with this chemical go? (check all that apply):	■ Discharged w/o treatment ■ Settling basin	☐ Septic System ☐ Publicly owned treatment works	■ Other (describe): On the grass
Provide any additional information about how this chemical was used and/or special pollution prevention practices during use: Foot baths and disinfectant totes allowed to go clear (inert) and drained on the lawn.			

Aquaculture Drugs and Chemicals (cont'd)

Additional Reporting Requirements for Water-Borne Treatments

- If a water-borne treatment was used during the calendar year, Permittees must include detailed records/calculations as an attachment to this Annual Report in order to demonstrate how the maximum effluent concentrations of solution and active ingredient were calculated for each chemical.
- EPA recognizes that water-borne treatments may vary in the volume of the vessels treated, concentration, quantity of product, etc. Permittees must provide the information listed in the following tables for a reasonable worst case (i.e., maximum effluent concentration) scenario, not for each individual treatment.
- Permittees must submit this information and calculate the maximum effluent concentration for each water-borne chemical used during the past calendar year.
- See also Appendix D for the Chemical Log Sheet.

Static Bath Treatments	
Tank Volume	Liters
Desired Static Bath Treatment Concentration	µg/L
Volume of Product Needed	Liters Product
Maximum Effluent Concentration of: 1) Solution and 2) Active Ingredient	Solution: Active Ingredient: Specify Units
Minimum Volume of Total (treated + untreated) Water Discharged from the Facility per day	Specify Units
Maximum % of Facility Discharge Treated	% of Total Discharge

Flow-Through Treatments		
Tank Volume	108737	Liters
Calculated Flow Rate	2271	Liters/Minute
Duration of Treatment	~120-240	Minutes
Desired Flow-Through Treatment Concentration of Product	Indefinite treatment	µg/L
Amount of Product to Add Initially	250 lbs in 5-50 lb salt blocks	Liters Product
Amount of Product to Add During Treatment	0	mL/Minute
Total Volume of Product Needed	250 lbs	Liters Product
Maximum Effluent Concentration of: 1) Solution and 2) Active Ingredient	Solution: N/A Active Ingredient: 416.9 ppm	Specify Units
Minimum Volume of Total (treated + untreated) Water Discharged from the Facility per day	8,301,600 gallons per day	Specify Units
Maximum % of Facility Discharge Treated	1.67%	% of Total Discharge

Aquaculture Drugs and Chemicals (cont'd)

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Static Bath Treatments	
Tank Volume	Liters
Desired Static Bath Treatment Concentration	µg/L
Volume of Product Needed	Liters Product
Maximum Effluent Concentration of: 1) Solution and 2) Active Ingredient	Solution: Active Ingredient: Specify Units
Minimum Volume of Total (treated + untreated) Water Discharged from the Facility per day	Specify Units
Maximum % of Facility Discharge Treated	% of Total Discharge

Flow-Through Treatments	
Tank Volume	108,737 Liters
Calculated Flow Rate	2,172 Liters/Minute
Duration of Treatment	60 Minutes
Desired Flow-Through Treatment Concentration of Product	31.08 (84 ul/l) µg/L
Amount of Product to Add Initially	9.1 Liters of Parasite-S Liters Product
Amount of Product to Add During Treatment	182.5 mL/Minute
Total Volume of Product Needed	20.95 Liters Product
Maximum Effluent Concentration of: 1) Solution and 2) Active Ingredient	Solution: 84 ul/l Active Ingredient: 31.08 ug/l formaldehyde Specify Units
Minimum Volume of Total (treated + untreated) Water Discharged from the Facility per day	8,301,600 gallons per day Specify Units
Maximum % of Facility Discharge Treated	2.5% (6 rwys treated/day) % of Total Discharge

Aquaculture Drugs and Chemicals (cont'd)

Additional Reporting Requirements for Water-Borne Treatments

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- EPA recognizes that water-borne treatments may vary in the volume of the vessels treated, concentration, quantity of product, etc. Permittees must provide the information listed in the following tables for a reasonable worst case (i.e., maximum effluent concentration) scenario, not for each individual treatment.
- Permittees must submit this information and calculate the maximum effluent concentration for each water-borne chemical used during the past calendar year.
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Static Bath Treatments		
Tank Volume	511 (45 trays at 11.36l each)	Liters
Desired Static Bath Treatment Concentration	(75 ppm) or 75,000	µg/L
Volume of Product Needed	3.834	Liters Product
Maximum Effluent Concentration of: 1) Solution and 2) Active Ingredient	Solution: 7.5 ml/l Active Ingredient: 75 ppm	⊞ ⊞ Specify Units
Minimum Volume of Total (treated + untreated) Water Discharged from the Facility per day	12,905,280 gallons/day	Specify Units
Maximum % of Facility Discharge Treated	10.4*10^-6	% of Total Discharge

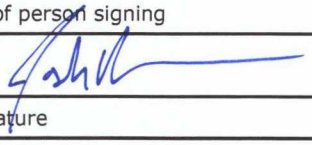
Flow-Through Treatments		
Tank Volume		Liters
Calculated Flow Rate		Liters/Minute
Duration of Treatment		Minutes
Desired Flow-Through Treatment Concentration of Product		µg/L
Amount of Product to Add Initially		Liters Product
Amount of Product to Add During Treatment		mL/Minute
Total Volume of Product Needed		Liters Product
Maximum Effluent Concentration of: 1) Solution and 2) Active Ingredient	Solution: Active Ingredient:	 Specify Units
Minimum Volume of Total (treated + untreated) Water Discharged from the Facility per day		Specify Units
Maximum % of Facility Discharge Treated		% of Total Discharge

Changes to the Facility or Operations

Describe any changes to the facility or operations since the last annual report.
No changes were made this year.

Signature and Certification

I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly evaluate and gather the information submitted. Based on my inquiry of the person or persons, who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Joshua D Homer	Hatchery Manager
Printed name of person signing	Title
	1/20/17
Applicant Signature	Date Signed

Submittal Information

Send the complete, signed information, along with any attachments, to the following address:

U.S. EPA Region 10, OWW-191

Washington Hatchery Annual Report

1200 Sixth Avenue, Suite 900

Seattle, WA 98101-3140

Quinault NFH - 2016 Annual Report concentration calculations

Formalin – Charged Flow Through

Raceway measures 80' long x 16' wide x 3' deep = 3,840 ft^3
-ft^3 to liters – 3,840 * 28.3168 = 108,737 liters
Flow crested weir measurement = 575 gpm
-gpm to liter/min – 575 * 3.79 = 2172 lpm

Charge to add

(volume in l * concentration in ul) / (conversion from ul to L) = charge volume in Liters

(108,737 * 84) / (1000*1000) = 9.1 liter

Metered to add

(flow in L/min * concentration in ul) / (conversion from ul to mL) = amount to add per minute

(2172 * 84) / (1000) = 182.5 ml/min
182.5 * 60 = 10,950 ml = 10.95 L
10.96 + 9.1 = 20.96 liters per treatment
Formalin at 37% formaldehyde – 37 grams formaldehyde in 100 mL solution

Salt

2271 l/min raceway flow (600 gpm per flow meter)
120 minutes minimum dissolution time of any one salt block observed in rwys
240 minutes 100% of blocks dissolved
1 ppm = 1 mg/L
250 pounds = 113.64 kg
113.64 kg/272,520 (liters in 120 min) = 0.0004169 kg/l = 416.9 mg/l = 416.9ppm

Ovadine

75 ppm available iodine using solution of 10 % Povidone iodine with 1% available iodine

7.5 ml Ovadine in 1 liter water = 75 ppm available iodine

Stock solution of 65 gallons made using 1,843 ml Ovadine. Individual trays filled from stock solution. A maximum of 45 trays filled in a single day in 2016, 45 trays at 3 gallons per tray (maximum volume, usually closer to 2.5 gallons), 135 gallons total (511 liters).